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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,010	10/21/2005	Dirk Jeroen Breebart	NL030489	9918
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EXAMINER PULLIAS, JESSE SCOTT				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/554,010

Applicant(s)

BREEBART ET AL.

Examiner

JESSE S. PULLIAS

Art Unit

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-10 and 13 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-8508)
4) ☐ Interview Summary (PTO-413)
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____
Paper No(s)/Mail Date _____

DETAILED ACTION

1. This office action is in response to correspondence filed 04/15/09 regarding application 10/554010, in which claims 1 and 8 were amended. Claims 1-10 and 13 are pending in the application and have been considered.

Response to Arguments

2. Applicant's arguments with on pages 6-8 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1-5, 7-10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rui et al. (7,028,325) in view of O'Hagan et al. (5,581,658), in further view of Gray et al. ("Design of Moving Average Trend Filters using Fidelity, Smoothness and Minimum Revisions Criteria". Statistical Research Report Series No. RR96/01, Institute of Statistics and Operations Research, Victoria University of Wellington, New Zealand, 1997).

With respect to claims 1 and 8, Rui discloses a means and method for classifying at least one audio signal into at least one audio class (**Abstract**, identifying exciting

segments), by: analyzing said audio signal to extract at least one predetermined audio feature (**Col 7 lines 59-60**, extracting different features of audio data); performing a frequency analysis on a set of values of said extracted predetermined audio feature (**Col 8 lines 1-5**, identifying the short-time energy in each of multiple different frequency bands) at different time instances (**Col 8 lines 1-2**, for each frame) resulting in a power spectrum of said extracted predetermined audio feature (**Col 8 lines 8-10**); deriving at least one further audio feature representing a temporal behavior of said extracted predetermined audio feature by parameterizing said power spectrum (**Col 8, Table 1**, average energy); and classifying said audio signal based on said further audio feature (**Col 9 lines 55-59**).

Rui does not specifically mention summarizing a frequency axis of the power spectrum by summing energy within at least one predetermined frequency band and dividing the summed energy within the at least one predetermined frequency band by an average of values of said extracted predetermined audio feature to yield a relative modulation depth.

O'Hagan discloses summarizing a frequency axis of the power spectrum by summing energy within at least one predetermined frequency band and dividing the summed energy within the at least one predetermined frequency band by an average of values of said extracted predetermined audio feature to yield a relative modulation depth (**Col 7 lines 25-29**, for each bin, which is a sum of energy in a frequency band, normalizing to the moving average by computing a ratio which is a relative modulation depth in at least the same sense as the term is used on page 7 lines 26-29 of the

present specification).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rui by summarizing a frequency axis of the power spectrum by summing energy within at least one predetermined frequency band and dividing the summed energy within the at least one predetermined frequency band by an average of values of said extracted predetermined audio feature to yield a relative modulation depth, in order to remove steady-state elements from a signal, as suggested by O'Hagan (**Col 7 lines 30-31**).

Rui and O'Hagan do not specifically mention an average of *subsequent* values.

Gray discloses an average of subsequent values (**p1, Abstract**, a central moving average filter divides the present value by preceding and subsequent values).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rui and O'Hagan to include an average of subsequent values by using a central moving average filter as the moving average filter, in order to determine the trend at the point of greatest precision, as suggested by Gray (**p10**).

With respect to claim 2, Rui discloses at least one predetermined audio feature comprises at least pitch (**Col 8 lines 62-63**).

With respect to claim 3, Rui discloses said predetermined audio feature comprises at least one Mel-frequency cepstral coefficient (**Col 8 lines 31-33**).

With respect to claim 5, Rui discloses calculating an average value of said set of values of said extracted predetermined audio feature at different time instances (**Col 8 lines 13-25**); defining at least one frequency band (**Col 8 lines 7-9**); calculating the amount of energy within said frequency band from said frequency analysis (**Col 8 lines 3-8**).

Rui does not specifically mention defining said further audio feature as said amount of energy divided by said average value.

O'Hagan discloses defining a further audio feature as said amount of energy divided by said average value (**Col 7 lines 25-29**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rui by defining said further audio feature as said amount of energy divided by said average value, in order to remove steady-state elements from a signal, as suggested by O'Hagan (**Col 7 lines 30-31**).

With respect to claim 7, Rui discloses at least one further audio feature is defined as at least one coefficient obtained by performing a discrete cosine transformation on the result of said frequency analysis (**Col 8 lines 33-34**).

With respect to claim 9, Rui discloses a music system comprising:
means for playing audio data from a medium (**Fig 2, Col 4 lines 56-57, speakers**); and
a system as claimed in claim 8 for classifying said audio data (**See claim 8**).

With respect to claim 10, Rui discloses a multi-media system comprising: means for playing audio data from a medium (**Fig 2, Col 4 lines 56-57, speakers**); a system as claimed in claim 8 for classifying said audio data (**See claim 8**); means for displaying video data from a further medium (**Fig 2**); means for analyzing said video data; and means for combining the results obtained from analyzing said video data with the results obtained from classifying said audio data (**Fig 3**).

Consider claim 13, Rui discloses a frequency analysis on a set of values of said extracted predetermined audio feature at different time instances results in a log power spectrum of said extracted predetermined audio feature (**Col 8 lines 40-45**).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rui et al. (7,028,325) in view of O'Hagan et al. (5,581,658), in further view of Gray et al. ("Design of Moving Average Trend Filters using Fidelity, Smoothness and Minimum Revisions Criteria". Statistical Research Report Series No. RR96/01, Institute of Statistics and Operations Research, Victoria University of Wellington, New Zealand, 1997), in further view of Blum et al. (5,918,223).

With respect to claim 4, Rui, O'Hagan, and Gray do not specifically mention said predetermined audio feature comprises at least one of the psycho-acoustic audio features loudness and sharpness.

Blum discloses audio feature comprises at least one of the psycho-acoustic audio features loudness and sharpness (**Col 6 lines 45-47**, brightness).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rui, O'Hagan, and Gray such that said predetermined audio feature comprises sharpness in order to see some of the essential characteristics of the sounds, as suggested by Blum (**Col 6 lines 50-52**), making the classification more accurate.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rui et al. (7,028,325) in view of O'Hagan et al. (5,581,658), in further view of Gray et al. ("Design of Moving Average Trend Filters using Fidelity, Smoothness and Minimum Revisions Criteria". Statistical Research Report Series No. RR96/01, Institute of Statistics and Operations Research, Victoria University of Wellington, New Zealand, 1997) in further view of Scheirer et al. (6,570,991).

With respect to claim 6, Rui discloses at least one of the following modulation frequency bands are used in said parameterizing said power spectrum: 1-2 Hz; 3-15 Hz; and 20-150 Hz (**Col 8 lines 7-8**, example band 630-1720 hz includes one of these bands).

Rui, O'Hagan, and Gray do not specifically mention the bands are modulation frequency bands.

Scheirer discloses modulation frequencies as a feature (**Col 7 lines 45-50**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rui, O'Hagan, and Gray such that the frequency bands are modulation frequency bands by using modulation as a feature as taught by Scheirer, in order to more readily classify speech, as suggested by Scheirer (**Col 7 lines 50-51**).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse Pullias whose telephone number is

571/270-5135. The examiner can normally be reached on M-F 9:00 AM - 4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571/272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571/270-6135.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jesse S Pullias/
Examiner, Art Unit 2626

/Talivaldis Ivars Smits/
Primary Examiner, Art Unit 2626

8/13/2009